LISTING OF CLAIMS

1.   (canceled)

2. (currently amended) A method of claim 7 ~~claim 1~~, wherein said step of modifying a query comprises the steps of prioritizing and filtering the retrieval of related information.

4.
3. (currently amended) A method of claim 7 ~~claim 1~~, wherein said step of modifying a query comprises the steps of augmenting information from the heterogeneous information sources.

10.
4. (currently amended) A method of claim 7 ~~claim 1~~, wherein said step of modifying a query comprises the step of modifying a query to optimize delivery of query results.

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12.
5. (currently amended) A method of claim 7 ~~claim 1~~, wherein the heterogeneous information sources are selected from the group consisting of one or more of: people-managed data sources; organization charts; mailing lists; calendar entries; personal address books; priority lists of contacts; and automated system log type information including phone logs and e-mail logs.

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6. (currently amended) A method of <u>claim 7</u> ~~claim 1~~, further comprising the step of assigning different preferences to the heterogeneous information sources.

7. (currently amended) <u>A method to optimize information retrieval for a user based on the user's communication relationships, comprising the steps of:</u>

<u>automatically extracting and integrating relationship information for said user from multiple heterogeneous information sources;</u>

<u>automatically building and storing a relationship data structure to represent the relationship information; and</u>

<u>automatically modifying an information retrieval query for said user based on the relationship data structure</u> ~~A method of claim 1, further comprising the steps of:~~

<u>wherein</u> said step of building a data structure further ~~comprising~~ <u>comprises</u> the step of tracking communication intensities between each pair of communication entities via each information source; and

integrating the relationship information from the heterogeneous information sources, in response to said tracking step.

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8. (original) A method of claim 7, further comprising the step of:

deriving a relation-group for each communication entity based on a pre-specified criterion on said communication intensities.

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9. (original) A method of claim 14, further comprising the step of:

selecting relation-group entities of a communication entity based on aggregate communication intensities to the communication entity.

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10. (original) A method of claim 15, further comprising the step of: computing an aggregate communication intensity from an entity A to an entity B based on a weighted sum of the communication intensities from said entity A to said entity B via each information source.

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11. (currently amended) A method of claim 7 ~~claim 1~~, further comprising the steps of:

assigning a weight to each information source based on a preference; and

computing the aggregate communication intensity, based on the weight and the preference.

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~~12~~. (original) A method of claim ~~8~~ **14**, further comprising the step of:

deriving relation-group entities of an entity allowing one or more of an indirect relationship and an inferred relationship.

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~~13~~. (original) A method of claim ~~12~~ **17**, further comprising the step of:

said deriving step further comprising the step of deriving a relation-group of an entity A, which can include the relation-group entities of an entity in the relation-group of the entity A.

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~~14~~. (original) A method of claim ~~8~~ **14**, further comprising the step of driving an awareness service based on a relation-group relationship.

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~~15~~. (original) A method of claim ~~7~~ **1**, further comprising the step of:

building and maintaining additional persistent data structures based on the results of the query to facilitate the response on future queries, based on the relationship data structure.

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16. (original) A method of claim **23** wherein the additional persistent data structure can be a personal address/phone book based on the communication intensity.

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17. (original) A method of claim **1**, further comprising the step of determining a significance of a relationship between two entities.

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18. (original) A method of claim **25** further comprising the step of determining the significance of a relationship based on the aggregate communication intensity.

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19. (original) A method of claim **1**, wherein the tracking step can be subject based.

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20. (original) A method of claim **14**, wherein the relation-group can be subject based.

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21. (original) A method of claim **26**, wherein the significance of the relationship can be subject based.

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22. (original) The method of claim **26**, further comprising the step of downloading information based on the significance of the relationship.

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~~23~~. (original) The method of claim ~~3~~ 4, further comprising the step of resolving name ambiguity by using the relationship from the heterogeneous information sources to determine one or more of an e-mail address, phone number, and a full name.

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~~24~~. (original) The method of claim ~~4~~ 10, further comprising the step of recommending a communication channel based on a recipient characteristic.

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~~25~~. (original) The method of claim ~~7~~ 1, further comprising the step of caching a document and information based on the significance of the relationship.

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~~26~~. (currently amended) A method of claim 1 ~~claim 1~~, further comprising the step of detecting inconsistency among data in the heterogeneous information sources.

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~~27~~. (original) The method of claim ~~26~~ 31, further comprising the step of detecting changes in the relationship information maintained.

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~~28~~. (original) The method of claim ~~27~~ 32, further comprising the step of propagating the changes.

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29. (original) The method of claim 27, further comprising the step of alerting the changes.

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30. (currently amended) A method of claim 1 claim 1, further comprising the steps of:

integrating the relationship information from the multiple heterogeneous sources using a graph wherein each node represents a communication entity, and a link between a pair of nodes represents the existence of a communication relationship between the two nodes.

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31. (original) A method of claim 30, further comprising the step of labeling each link with a communication intensity vector, where each dimension of the communication intensity vector represents a communication intensity from an information source.

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32. (original) A method of claim 12, further comprising the step of calculating aggregate communication intensities taking into account the indirect relationship.

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33 32. (currently amended) A method of claim 3, further comprising the step of obtaining relevant information from the heterogeneous information sources, said information selected from the group consisting of one or more of: phone numbers; e-mail

addresses: mailing addresses; office location; department; or

manager, from various information sources.

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34. (original) A method of claim 7, further comprising the step

of calculating a communication intensity based on a number of

communication events.

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35. (original) A method of claim 7, further comprising the step

of calculating a communication intensity based on both a number

of communication events and their temporal characteristics.

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36. (original) A method of claim 7, further comprising the step

of calculating a communication intensity based on an analysis of

a content of a communication event.

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37. (original) A method of claim 4, further comprising the step

of modifying the query to create one or more sub-queries.

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38. (original) A method of claim 37, further comprising the step

of aggregating results from the sub-queries.

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39. (original) A method of claim 37, further comprising the step

of excluding results from the sub-queries.

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40.   (currently amended)   A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for optimize information retrieval based on a user's communication relationships,   said method steps comprising:

automatically extracting and integrating relationship information for said user from multiple heterogeneous information sources;

automatically building and storing a data structure to represent the relationship information; and

automatically modifying an user's information retrieval query based on the relationship data structure,

wherein said step of building a data structure further comprises the step of tracking communication intensities between each pair of communication entities via each information source; and

integrating the relationship information from the heterogeneous information sources, in response to said tracking step.

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41.   (original) A method of claim 2, further comprising the step of prioritizing and filtering a list of name-to-e-mail address mappings to facilitate sending e-mail.

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